

Remarks.—This species belongs to the group of which *U. trigonus* Lea, may be considered the type, although differing much from that species in outline, beaks and in the uniform roundness of the sides. It also has certain characters indicating a relationship with *U. Ridellii* Lea, *U. Chunii* Lea and *U. cuneus* Con. It differs from the first in having the posterior apex lower and more or less biangulated; the posterior margin rounded, instead of straight; posterior margin without the hip peculiar to *U. Ridellii*; the cardinal teeth are heavier and not pyramidal; and differs most remarkably in the character of the beak undulations. From *U. Chunii* Lea, it differs in having a greater depth of cavity; more massive and higher umbones and swollen sides without depressions; much shorter posterior extension; base not emarginate; entire absence of rays and the same difference in beak undulations that distinguishes it from *U. Ridellii* Lea. It differs from *U. cuneus* Con. in being smoother; lighter colored epidermis; much larger opening to the umbonial cavity; cavity of the shell much deeper and more uniformly rounded; lateral teeth more slender and the species never attains the extreme size of *U. cuneus*, the declivity of the posterior slope is much steeper; the ligament shorter; without the anterior subtruncation, and it is never cuneiform.

The peculiar undulations of the beaks amply distinguish it from any other known species.

Some twenty-five specimens have been critically examined which maintain a remarkable constancy in all the characters.

It is named in honor of Mr. Lorraine S. Frierson of Frierson Mill, La. who is a zealous student and collector of Unionidæ.

ON CERTAIN ABNORMAL SPHÆRIA.

BY BRYANT WALKER, DETROIT, MICH.

The peculiar characteristics of the hinge-teeth of the American species of *Sphærium* and *Pisidium* have been almost totally ignored by Prime and the earlier writers in their descriptions of the various species which they established. With the exception of some of the descriptions of the more recently described species, nothing but the most general remarks upon the subject are to be found in the American literature upon these genera. Among the European concholog-

ists, however, more attention has been given in this direction, and while perhaps some have gone to the other extreme and have accorded too great importance to the hinge characters, there can be no doubt, but that a careful and conservative study of our American species in this regard would be in many cases a valuable assistance to the determination of the relations and specific validity of many of the at present poorly defined and ill-understood forms.

In examining some specimens of the common *Sphærium striatinum* Lam. recently, I was struck in several instances with the occurrence of an abnormal arrangement of the hinge teeth, and was thereby induced to go further and ascertain if possible to what extent such irregularities were present.

My observations thus far have been confined to two species, *Sphærium striatinum* Lam., and *S. simile* Say. Of the former species one hundred specimens from twenty-four localities, were chosen at haphazard, the number from each locality varying from one to eleven. Of these, all the specimens from sixteen localities, forty-six in number, were normal. Of the remaining fifty-four specimens from eight localities, ten were abnormal. In only one instance, did more than a single abnormal individual occur in any one locality, and in that, three out of nine specimens were abnormal and all in the same particular.

Of *Sphærium simile* Say, sixty-four specimens from nineteen localities were examined, the number from each locality varying from one to six. Of these, ten individuals out of thirty from eight different localities were abnormal. While in those from eleven localities, represented by thirty-four specimens, no variation occurred. In both species the number of abnormal specimens seems surprisingly large, amounting to ten per cent in *S. striatinum* and to nearly sixteen per cent in *S. simile*. In no case was any attempt made to pick out unusual specimens and, indeed, no external variation in appearance was noticed as being coincident with the abnormal arrangement of the hinge.

The normal arrangement of the hinge-teeth of a *Sphærium* is as follows:

Right valve	Cardinal 1	Ant. laterals 2	Post. laterals 2.
Left valve	Cardinals 2	Ant. lateral 1	Post. lateral 1.

The variations noticed consisted in the reversing of the position of one or more pairs of these teeth.

Of the seven possible variations from the normal arrangement, but four were noticed. In no case were the cardinals alone reversed, but invariably a reversal of these teeth was accompanied by a reversal of either one or both pairs of laterals. Neither were the cardinals and posterior laterals alone, nor both pairs of laterals alone reversed in any case. The following table gives the details of the different variations observed and their relative frequency.

Normal *Sphærium*—cardinals $\frac{1}{2}$ Ant. Lat. $\frac{2}{1}$ Post. Lat. $\frac{2}{1}$.

Abnormal *S. striatinum* Lam.

No. of specimens 22: Cardinals $\frac{1}{2}$ Ant. Lat. $\frac{1}{2}$ Post. Lat. $\frac{2}{1}$.

No. of specimens 32: Cardinals $\frac{2}{1}$ Ant. Lat. $\frac{1}{2}$ Post. Lat. $\frac{2}{1}$.

No. of specimens 22: Cardinals $\frac{2}{1}$ Ant. Lat. $\frac{1}{2}$ Post. Lat. $\frac{1}{2}$.

No. of specimens 32: Cardinals $\frac{1}{2}$ Ant. Lat. $\frac{2}{1}$ Post. Lat. $\frac{1}{2}$.

Abnormal *S. simile* Say.

No. of specimens 52: Cardinals $\frac{2}{1}$ Ant. Lat. $\frac{1}{2}$ Post. Lat. $\frac{2}{1}$.

No. of specimens 32: Cardinals $\frac{2}{1}$ Ant. Lat. $\frac{1}{2}$ Post. Lat. $\frac{1}{2}$.

No. of specimens 22: Cardinals $\frac{1}{2}$ Ant. Lat. $\frac{2}{1}$ Post. Lat. $\frac{1}{2}$.

NEW AMERICAN ANCYLIDÆ.

BY HENRY A. PILSBRY.

Owing doubtless to the difficulty of distinguishing species in this group, but little work has been done upon the United States forms since the publication of Haldeman's monograph in 1842. Clessin, in the "Conchylien Cabinet," has added nothing of value to our knowledge of United States species, his *A. oregonensis* from Salem, Oregon, of which I have "topotypes," being doubtfully distinct from Tryon's *A. fragilis*. *A. caurinus* is also, as Tryon states, a synonym of *fragilis*.

In naming a series of Illinois mollusks for the Illinois State Laboratory of Natural History, my attention was directed to this genus.

The species of *Ancylus* fall into two groups, not, I suppose, of much importance systematically, but of considerable interest in a broad view of the conditions of mollusk life. One group, which may be termed the "petrophilous" *Ancyli*, live on rocks and shells in rivers, and usually have a rather highly conic shell. The other group, "phytophilous" *Ancyli*, live on water plants; some deeply submerged, as on the "leaves of grass" (to use a Walt. Whitmanism), streaming upward from the bottom; others inhabit the round